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The Role of Salutogenic Design in Mental and Medical Health-Integrated University Clinics

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Introduction

A university healthcare clinic is an integral part of its academic community and can contribute to the salutogenesis, or health promotion, of the students, staff and faculty in two ways: 1) through its philosophy and protocols as a contributor to the broader campus culture and 2) through the physical environment of the clinic itself. The notion that a clinic can play a role in supporting health and well-being has been explored by previous researchers (e.g., Lindmark, et al., 2018; Rakel, 2008). By facilitating a sense of coherence, a renovated university health clinic can be a salutogenic resource to both students and staff.

The research described here addresses a new medical and mental health-integrated university clinic facility, the design of which includes salutogenic components at both levels. In this study, researchers used interviews and surveys to evaluate the following six primary design goals, established for the clinic during programming: Transparency, Accessibility, Privacy, Integration, Collaboration, and Welcoming.

Regarding the physical environment, the new clinic addresses many of the goals suggested by previous authors (e.g., Abdelaal & Soebarto, 2019; Mazuch, 2017; Wister, 2005). According to Antonovsky (1996), the primary objective of salutogenesis is to provide a sense of coherence (SOC) through comprehensibility, manageability and meaningfulness. A study of the salutogenic model among university students suggests the importance of the college environment in affording SOC (Heiman, 2010).

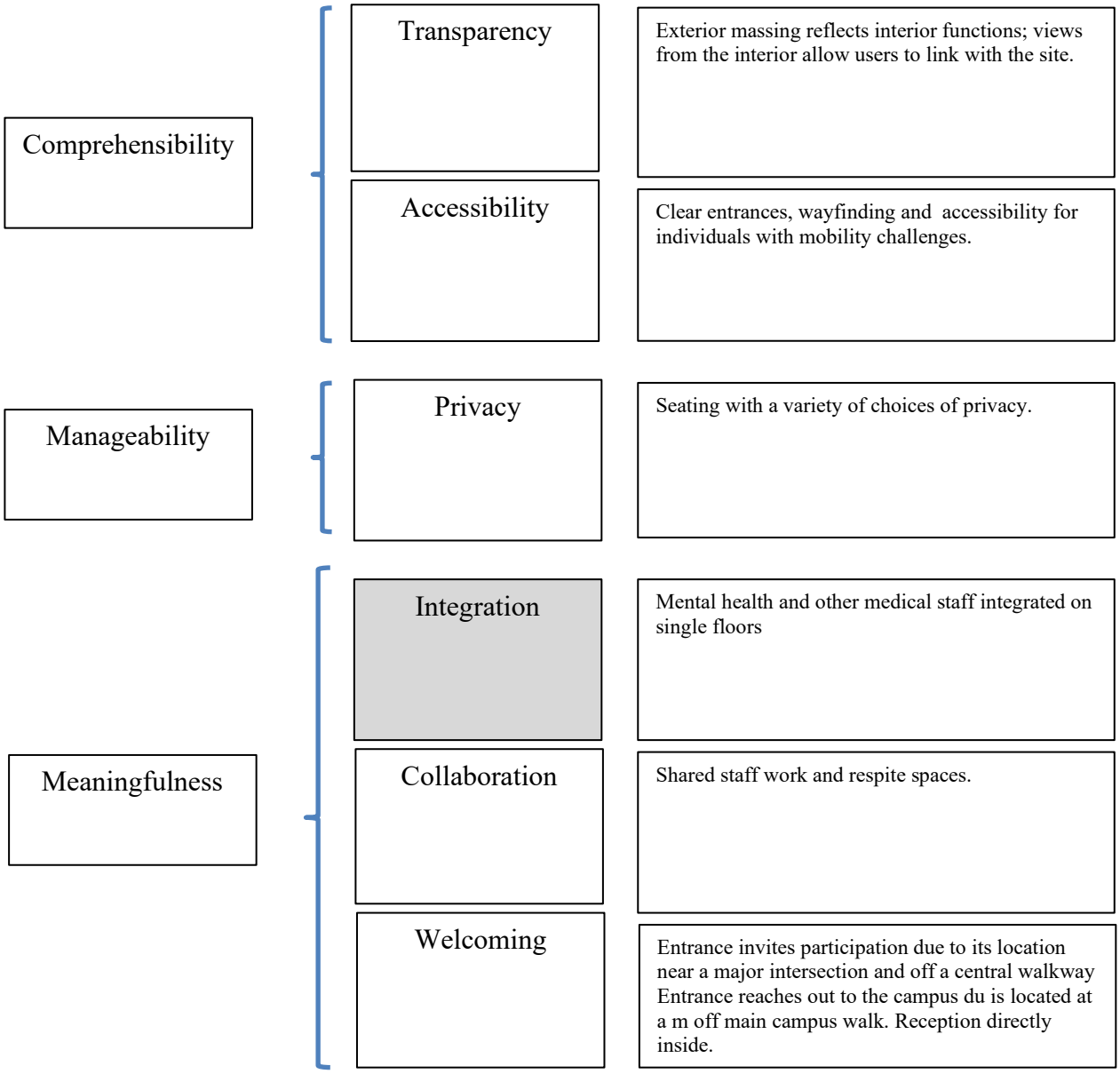

Figure 1: Design goals for the clinic in relation to Antonovsky's three characteristics contributing to sense of coherence.

Of the design goals, mental and physical health integration, a subset of meaningfulness, was the most innovative and the focus of this paper. Supporting mental health is a primary tenet of salutogenic design, and salutogenic design has been shown to be protective against negative mental health outcomes (Gana & Mezred, 2009 and Koleck et al., 2003, as cited in Mathieu et al., 2017). To this end, clinical care can make the difference between severe mental illness and successful

treatment. Coping with mental health challenges and dealing with mental illness is demonstrably more effective when medical morbidities are considered at the same time.

The integrated primary care model proposed by Blount (2003) suggests three goals of medical and mental health collaborations: produce healthier patients, reduce cost and improve patient and provider satisfaction. Indeed, numerous studies have found financial and clinical benefits from this type of integration (Walker & Collins, 2009). Integration has proven beneficial among unified systems like Health Maintenance Organizations (Cummings & Follette, 1967; Follette & Cummings, 1968) and the Veterans Administration (Druss et al., 2001).

As unified systems, university health centers may expect similar benefits from integration, though the university student population requires unique considerations in the provision of primary care and mental health services. With mental health treatment among the top public health concerns for late adolescents and young adults, some universities, such as the facility that was the focus of this study, have extended the concept of integration across campus services by combining somatic medical and mental and behavioral health (MBH) services.

University Health Services and Salutogenesis

The literature on salutogenesis in university environments is limited (Dooris, Doherty & Orme, 2017), however the need to conduct such research is driven by contemporary society. Dooris, Doherty and Orme (2017) note that university student populations are becoming more diverse, and campuses have responded by addressing issues of student engagement, support and well-being, all concepts associated with salutogenesis. Universities are the focal point of life transition and development of citizenship for both students and staff (Dooris et al., 2012). They are the primary venues for making sense of one's life, and need to be designed to support coherence (Dooris, Dojerty and Orme (2017). Sense of coherence predicts mental health among college-aged students (Carlén et al., 2020; Tóth et al., 2020). Lastly, universities provide the context for developing an understanding of health goals (Holt et al., 2015). Salutogenic approaches must be employed to address transitioning cultural complexity and the development of healthy behaviors.

University Mental Health Services and Salutogenesis

In addition to these contemporary challenges, university student mental health is a concern. In a 2019 international survey involving over 500 universities, 87% of campus psychological service directors reported an increasing demand for mental health services (LeViness et al., 2019). Between 2007 and 2018, rates of depression, anxiety, self-injury, and suicidal behavior significantly increased among US college students – in some cases, these rates have even doubled over the last decade (Duffy et al., 2019). While part of this growth is due to an increase in help-seeking behaviors (Hunt & Eisenberg, 2010), at least a portion must be attributed to an increase in disorder prevalence.

Though students are seeking more mental health services, they are not receiving adequate treatment. In 2018, a substantial percentage of students reported a disruption in their academic performance due to stress, anxiety, or depression (American College Health Association, 2018). Integrating counseling/psychological services and somatic health services may increase early detection and treatment for these college students (Alschuler et al., 2008).

Several studies have identified barriers to MBH treatment among young people, including societal stigma (Corrigan, 2004), a lack of awareness about treatment (Edlund et al., 2002) and lengthy provider waitlists (Wisdom et al., 2011). Integration of medical services with counseling and psychological services seeks to address these barriers.

With more students entering college with a diagnosed disorder or seeking first-time treatment for a disorder during college, the burden on university health centers has increased. Primary care is often the first place an individual will seek treatment for mental health issues. Between 1990-2003, nearly 75% of primary care visits involved a mental health concern (Kessler et al., 2005). Yet, primary care providers on college campuses report a lack of resources, education and confidence in treating mental health disorders (Pratt et al., 2012). Integration can improve willingness among university primary care providers to collaborate and refer patients to behavioral health practitioners (Funderburk et al., 2012).

Antonovsky's salutogenic model has been adopted by positive psychologists as a framework for mental health counseling (Mayer et al., 2019). Improving sense of coherence (SOC) can result in improved academic functioning among college students (Feldman et al., 2012),

positive adjustment during the first year of university (Davidson et al., 2012), and effective career thinking (Austin & Cilliers, 2011).

Beyond students, the salutogenic model has also been applied to educators and mental health staff. A study of employees at a university in the United States (US) showed significant associations between SOC, stress, and well-being (Ryland & Greenfield, 1991). More recently, employees at a university in Germany showed similar improvement in both physical and mental health outcomes as SOC improved (Graeser, 2011). A study of a salutogenic employee intervention program at an Israeli psychiatric inpatient facility suggests links between employee SOC and patient health and wellbeing (Idan et al., 2013).

Service Integration and the Built Environment

In the only comprehensive report of integration among university health centers that we uncovered, an American College Health Association (ACHA) task force surveyed staff members at academic institutions across the US, ranging from 0-40,000+ undergraduates (Anderson et al., 2010). Respondents included physicians, care providers, and members of the counseling and psychological services teams. Survey results from the 92 integrated university health centers describe several factors driving the change to integration, including improved continuity of care, philosophy of care, and directives from upper administration. The least influential factors included physical facilities (18.5%). In a brief discussion of the physical space, results indicated that reception/check-in areas are shared less than 50% of the time in service-integrated facilities. This was the only environmental characteristic mentioned in the ACHA report, although there is a substantial body of literature connecting the built environment to physical and behavioral outcomes in health care facilities (Devlin & Arneill, 2003). For example, providing patients with an opportunity for privacy in a university setting is believed to improve mental health (Evans, 2003).

Relevant to an integrated university health setting, an off-stage area or a casual room for staff members has been shown to improve collaboration among nursing staff (Gum et al., 2012). Full-time university counselors spend 20% of their time in indirect service, including consultation and case conferences with other professionals (Gallagher, 2009) and providing a space for these interprofessional conversations is a key consideration in the built environment. Though there are no existing studies on salutogenic design in university health facilities, researchers have explored

salutogenic design for psychiatric health, namely the qualities influencing comprehensibility, manageability, and meaning (Golembiewski, 2010).

Given the very limited research investigating the built environment and integrated health facilities, the current research sought to address the following questions: (1) How successfully were the client-designer goals implemented in the renovation of a university health clinic? (2) Does integration of medical and MBH services improve other environmental qualities, like privacy and collaboration? (3) What environmental features and characteristics support or hinder integration? While mental health outcomes per se (i.e., changes in levels of pathology) were not measured, surrogates for these outcomes, such as sense of privacy, were included.

The three questions resulted in three hypotheses:

- Hypothesis 1: The facility successfully achieved the design goals established prior to construction.
- Hypothesis 2: Students will report an increased a sense of privacy as a result of service integration.
- Hypothesis 3: Ratings of integration will be associated with ratings of collaboration.

Methods

Two tools were used to explore these questions using the format associated with a Practitioner-Focused Facility Evaluation (PFE), which emphasizes using the design goals as research hypotheses (Shepley, 2011). The setting was a new university healthcare clinic in the United States.

Setting

The university's original clinic facility was built in 1956. Between then and the time of this study, the number of visitors increased by 250%, the size of the staff doubled, and the number of mental health visits tripled. The facility accommodates approximately 500 patient visits per day during the peak period and provides clinical primary care, Counseling and Psychological Services (CaPS), and nutrition and wellness counseling to all students throughout the year. To address the needs of the growing student body and to provide a facility that meets current codes, the university initiated a capital improvement program involving the renovation of portions of the existing facility

and the construction of an addition. In Phase 1 (between 2015-2016), the addition was built, and all operations were moved into the new building. The medical and counseling services, which had been segregated within the building, were first integrated within the same floor at this time. Phase 2, completed in Fall 2017, involved renovating the existing structure and connecting it to the new structure.

The design team was interested in several goals that are often associated with salutogenesis, such as acknowledging the role of nature in promoting health and well-being. The clinic participates in the ParkRx program in which students are given a prescription to interact with nature as part of their treatment. (See Kondo, et al., (2020) for a description of the ParkRx program.) Figures 2, 3, 4 and 5 provide a site plan and exterior views.

Figure 2: Clinic site plan showing entrance on right off pedestrian promenade (Source: authors)

Figure 3: Approach to health building adjacent to pedestrian promenade (Source: authors)

Figure 4: Approach to health building from the south (Source: authors)

Figure 5: Pedestrian plaza showing bike racks and pedestrian seating (Source: authors)

Staff Interviews

The research team employed a semi-structured interview approach utilizing a set of 17 open-ended questions involving 13 interviewees (five in Phase 1, eight in Phase 2). The interview structure was designed to gain a design practice-focused impression of the six pre-established renovation design goals. Parallel question formatting ensured consistency across participants, and printed floor plans were made available for visual reference. Two researchers were present for each interview, lasting about 30 minutes each. All interviews were audio-recorded with permission using mobile phones or computer applications for transcription.

The research team utilized the naturalistic inquiry method (Lincoln & Guba, 1985), a grounded theory approach that allows researchers to gain a holistic understanding of thoughts, feelings, values, and perceptions of interviewees. Naturalistic inquiry proceeds by converting interview transcriptions into distinct concepts written on index cards (or a computer-based equivalent). These index cards are then sorted into broad themes. Index cards were created to represent each new concept mentioned by interviewees. The index cards were then sorted into

broad themes during a group discussion involving the research team. The naturalistic inquiry process was completed twice, after both the Phase 1 and Phase 2 interviews.

In a typical naturalistic inquiry exercise, individual researchers would create notecards (codes) and identify themes separately before collaborating with other researchers. In the current study, because the research team had already identified six *a priori* themes from the design goals, analysis immediately proceeded to group discussion.

Staff and Student Questionnaire

After examining the predetermined design goals, the researchers created a draft questionnaire, which was revised based on the feedback from the health center representative and interviewees. The feedback did not address the six themes specifically but clarified room and title designations and expanded upon definitions.

University undergraduate and graduate students (the "patients") and university health clinic staff participated in the Phase 1 and Phase 2 questionnaires (see Table 1). Staff members responded to the questionnaire online through an email sent out to all university health center staff in both 2016 (n = 58) and 2019 (n = 90). Students responded online and through paper questionnaires in both 2016 (n = 132) and 2019 (n = 36). Student questionnaires were placed in waiting rooms with signage directing students to complete the questionnaire. To increase participation, team members visited the waiting rooms to distribute questionnaires in person. Team members also distributed links to the online questionnaire through their personal student networks.

Table 1

Frequency Statistics by Demographic Variables: Questionnaire

Student – Designation	*n*	%
Freshman	17	5.4
Sophomore/Junior/Senior	112	35.4
Graduate student	35	11.1
Professional student	2	0.6
Other	2	0.6
Student – International Status		
International student	43	25.9
Domestic student	123	74.1
Staff – Length of Employment at Facility		
1 year or less	31	21.1
2 to 5 years	39	26.5
6 to 10 years	25	16.9
More than 10 years	52	35.1
Staff – Professional Grouping		
Administrative services	37	25.2
Counseling and psychological services	27	18.4
Medical services and occupational medicine	46	31.3
Nursing / nutritionists	12	8.1
Clinical support services	3	2.0
Other	22	14.9
Staff – Age		
30 or younger	16	10.9
31 to 40	29	19.7
40 or older	102	69.4

In addition to basic demographic questions, the questionnaire asked for level of agreement with the design goals on a 5-point Likert-type scale. The questionnaire defined each design goal before asking for a response. The last quantitative question asked participants to rank the importance of the different design goals. An open-ended question at the end of the questionnaire asked for comments about the new facility. The staff questionnaire differed from the student questionnaire in the demographic questions (e.g., job title versus student year) and the inclusion of "collaboration" as a design goal, as collaboration specifically involved staff interactions.

Results

Staff Interviews

Integration. During Phase I, all interviewees agreed that integration was important in the redesign. Interviewees discussed how the new building's physical environment allowed staff to become more integrated and collaborative, something that was lacking previously because departments were physically separated. Phase 1 interviewees suggested the health clinic is still adapting to this model after the integration of the physical environment.

During Phase 2, integration of the counseling and medical staff was discussed mostly in a positive light, although some lingering challenges were mentioned. Many staff members shared the opinion that having mental and physical health departments combined was better for patients. The most frequently cited reason for this opinion was that integration facilitates the mindset of "whole-person" care while also removing the stigma surrounding mental healthcare by anonymizing the visitor's reason for sitting in the waiting room. Many noted that departmental integration has helped with more frequent and effective interdepartmental collaboration for patients who receive both primary care and psychological care, although it is worth noting that the mechanism of practitioner collaboration was not clearly specified (e.g., running into one another in the hall scheduling meetings).

One area of challenge with the integration goal was a loss of specialized expertise for front desk staff. The front desk staff, whohad previously developed expertise in either psychological services or primary care and, post-integration, are now expected to have dual competency. As an additional source of possible tension, the cohesiveness within counseling staff has been somewhat

compromised due to the department being split into multiple floors. This fact was mentioned in the context of tradeoffs benefiting the design goal of integration.

Collaboration. Several building features were considered as fostering collaboration. Multiple staff members expressed appreciation for larger individual offices that provide adequate space for small meetings. The office furniture (small tables and seating) is perceived as ideal for meetings of two to three people. Some offices also feature television monitors, so individuals are not required to book meeting spaces to accommodate technological needs. One staff member commented that many employees utilize the consultation rooms as a break area rather than for meetings. In addition, the consultation rooms are thought to be beneficial for collaboration.

Circulation spaces, such as hallways and reception areas, were viewed as fostering collaboration as well. As an example, chairs are situated at the end of some hallways. These areas function as impromptu meeting locations and are greatly appreciated by the medical staff. Additionally, hallways are seen as spacious enough that CaPS and medical staff may cross paths at unplanned times, providing opportunities for impromptu conversations.

In Phase I, some interviewees felt that some collaborations between departments had been enhanced while others felt that collaboration within departments had been reduced. One interviewee predicted that the way staff approach integration and collaboration will evolve as people adjust to the move from temporary to permanent offices. Phase I interviewees also reported challenges, which were not completely anticipated, to staying connected in the new space. People were closer and easier to find in the old building, simply because the building itself was smaller.

During Phase 2, some of the same concerns were echoed. In speaking with primary care staff members, there was a sense that moving into a larger facility led to both positive and negative outcomes in the day-to-day work experience. All three primary care staff mentioned the increased facility size as a potential challenge to collaboration: “Now we’re so spread out that sometimes it’s hard” and “We don’t see each other as much.”

The increased size in the exam rooms, however, was unanimously praised using terms such as “wonderful” by these individuals. One primary care staff member stated, “You have a space where you can actually physically do the things that you’re supposed to be doing” as compared to

the pre-renovation space in which "it was almost like a closet; you had to do a little dance to get around each other."

Privacy. During both phases, many interviewees mentioned the positive benefits afforded by the integration of primary care with counseling and psychological services. All interviewees agreed that privacy was a priority in the redesign.

The reasons cited for the improved privacy were threefold: (1) an individual's particular health concern remains private as everyone waits together; (2) having the waiting area tucked behind the check-in area may deter non-patient lingering; and (3) privacy dividers that extend upward from the back of some of the waiting room furniture pieces provide visual enclosure. Having a large waiting area was also mentioned as possibly contributing to privacy because visitors have more space. One interviewee, however, mentioned a student who felt more exposed in the larger waiting area when compared to the prior smaller waiting room.

Soundproofing was thought to have improved dramatically when compared to the old facility and contributed to a sense of privacy. This observation was made by both mental health and primary care staff: "People can't hear from room-to-room, which used to happen." Specifically, the material-based dampening and the integrated white noise from the air conditioning vents were each seen as contributing factors.

Questionnaire – Staff and Students

All six dimensions were rated positively ($M > 3$ on a 5-item Likert scale) by staff and students, suggesting successful implementation of the design goals. Mann-Whitney tests revealed significant increases in student and staff ratings of welcoming, transparency, and accessibility between 2016 and 2019 (see Table 2).

Ratings of integration were significantly correlated with all other environmental qualities, but were most closely correlated with ratings of privacy and collaboration (see Table 3). The correlation between these qualities is a testament to the relationship between design interventions that support salutogenesis.

Table 2. *Mann-Whitney Tests for Differences Between Survey Years*

				95% CI of Difference			
	Survey Year	*N*	*M*	Lower	Upper	*U*	*p*
Welcoming	2016	189	3.70	-0.64	-0.26	8539.0	< .001*
	2019	126	4.15				
Transparency	2016	190	3.38	-0.63	-0.22	9076.0	< .001*
	2019	126	3.81				
Privacy	2016	190	3.92	-0.04	0.36	11006.5	.176
	2019	126	3.76				
Accessibility	2016	190	3.26	-0.63	-0.16	9213.0	< .001*
	2019	126	3.65				
Integration	2016	190	3.57	-0.35	.07	10871.0	.142
	2019	126	3.71				
Collaboration^	2016	58	3.33	-0.47	0.28	2587.5	.925
	2019	90	3.42				

* indicates statistically significant difference

^ only staff respondents provided ratings for collaboration

Table 3

Correlations between Ratings of Integration and Other Design Goals (Phases 1 and 2 combined)

	r	*p*
Integration & Welcoming	.391	< .001*
Transparency	.399	< .001*
Privacy	.420	< .001*
Accessibility	.292	< .001*
Collaboration^	.482	< .001*

* indicates statistically significant difference

^ only staff respondents provided ratings for collaboration

Discussion

While this study focused on the impact of the physical environment on integration (student privacy and staff collaboration), a primary objective was to examine the success of the six design goals established during programming. The results of the questionnaire suggest staff and students reacted positively to the new facility, particularly in the dimensions of welcoming and privacy. Staff interviews further illuminate the positive results, unintended consequences, and continued challenges of service integration. Transitions in opinions/perceptions were noted between the two phases, likely due to staff growing accustomed to the new facility, and reductions in overcrowding as a result of moving from the small, renovated facility to a larger expanded facility. Previous researchers have noted differences in the responses of users in facilities providing mental health services (de Vries et al., 2016; Papoulias et al., 2014; Rose et al., 2015; Sachs et al., 2019).

The quantitative and qualitative results suggest **Hypothesis 1** was mostly supported, as the facility successfully achieved the design goals established prior to construction. Lingering challenges included the separation of co-workers in similar departments, loss of specialized front-desk staff, and lack of perceived solidarity between students seeking mental health services. Future research may further explore the tradeoff between the privacy afforded to students when medical and behavioral health services are co-located, and the loss of solidarity reported by students when they previously sought care together on a designated counseling floor.

Hypothesis 2 was also supported, as students reported an increased sense in privacy as a result of service integration, a potential contributor to the salutogenic experience. Staff interviews supported the findings from the questionnaire. Several dimensions of privacy were improved due to integration, including both auditory and visual, and the social protection of personal motivations for seeking health care. As the stigma of mental health services remains a barrier to seeking treatment for young people, integration serves a vital role by eliminating potential opportunities for privacy violations in the waiting room. Previous research has explored this idea of social privacy in MBH treatment. Multiple facilities have been successful in improving referral rates by requiring universal MBH screenings, thus eliminating the stigma of screenings (Wissow et al., 2013). Previous research reveals a number of spatial characteristics of privacy that should be explored in future research (Alalouch et al., 2016).

Hypothesis 3 was only partially supported – ratings of integration were significantly associated with ratings of collaboration on the questionnaire, though integration was also significantly correlated with the other dimensions, suggesting some dimensional overlap between the design goals. Staff interviews also suggested some overlap, as questions regarding integration often prompted responses involving collaboration, communication, and privacy. Hudson and colleagues' model of collaboration in primary care may explain these intersections; they propose a four-point continuum ranging from isolation to communication to collaboration to integration. This model suggests collaboration and integration represent different magnitudes of the same dimension (Hudson et al., 1997). Future research should be explicit in defining integration as it relates to the built environment and distinguishing it from other measures of collaboration or communication.

Conclusion

This study invites designers to consider an expanded definition of salutogenesis. Mazzi (2020) suggests that in addition to enhancing sense of cohesion (SOC), the definition can more pointedly include other means of stress reduction such as: prospect and refuge, biophilia, relaxation response, and personal empowerment. Dilani (2008) cites specific qualities that reflect this and other theories such as social interaction, choice and control, support of wayfinding, and the role of landmarks. Golembiewski (2010) also contributes to this discussion by recommending deinstitutionalized environments that reinforce understanding of distance and time. Building standards supporting the features mentioned by Mazzi, Golembiewski, and Dilani are evolving. For example, many of the topics advocated by the International WELL Building Institute emphasize the importance of good air quality, light and water, appropriate nutrition, comfort, and mindfulness as contributors to wellness (International WELL Building Institute, 2019).

The research team conducted a Practitioner-focused Facility Evaluation (PFE) (Shepley, 2011) of a renovated university health facility to evaluate the six primary design goals drawn from the original planning documents, which support the salutogenic goals of comprehensibility (transparency and accessibility), manageability (privacy), and meaningfulness (integration, collaboration, and welcoming). Student and staff responses suggest these design goals were for the most part successfully achieved, though these goals were not achieved without tradeoffs, and lingering challenges remain to be addressed in future PFEs. Integration and co-location of medical services with MBH services resulted in increased collaboration among staff and increased privacy

for students. Privacy was also supported by several other elements of the built environment, including the use of white-noise machines and visual barriers.

Though this was a case study evaluation of a single facility, there are still implications for design professionals and future researchers. With no existing research on successful service integration in a university setting, this study offers the following takeaways:

1. Practitioner-focused Facility Evaluations (PFEs) can be a valuable tool for evaluating the success of salutogenic-related design goals in a health facility.
2. When constructing a university health facility and to achieve salutogenic design, the provision of multiple dimensions of privacy should be prioritized. This includes auditory privacy through white-noise machines, visual privacy by using barriers, and social privacy by co-locating primary care and MBH services within a single floor.
3. Co-locating services within a single floor may improve collaboration between primary care and MBH staff in a health facility, but steps should also be taken to ensure limited disruption within staff units.

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